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10/038,400	01/03/2002	Kenton Michael Fuqua	AUDIOPH1100	8375

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EXAMINER

LEE, PING

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,400

Applicant(s)

FUQUA, KENTON MICHAEL

Examiner

Ping Lee

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/23/02, 10/3/03.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-153 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-153 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/3/02.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 81, 97 and 112-117 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the subject matter as specified in claim 88 has not been disclosed in the specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 64-153 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 64, the limitation that "said power supply providing between 2 to 10 volts root means square through a resistor connected to the transducer output" cannot be enabled by the specification as originally filed. Paragraph 26 of the specification specifies a low noise power supply having an approximately plus or minus 14 volts DC. Paragraph 46 states that the power supply 130 converts a power supply received from power supply 106 (based on the statement in para. 26, this is approximately 14 volts DC), to approximately 6 volts for bias power for the transducer. This means 6 volts DC. Paragraph 52 states that 25 volts AC converts to 17.625×2 volts DC, 15 volt reference voltage, final regulation of voltage is approximately 13.8 volts. Therefore, the specification fails to provide an enablement for this limitation.

Claims 98, 100, 102, 122, 125, 128, 139, 140 and 153 have similar language. Therefore, they present the same defect.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 93 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 93, "said one or more capacitors" lack antecedent basis.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 10-11, 25, 26, 45, 50, 58, 59, 61, 63 are rejected under 35

U.S.C. 102(b) as being anticipated by Smith et al (US 4,000,370).

Regarding claim 1, Smith discloses a sound capture device: a transducer (18); a supply conductor (inherently included connected to “B+”) for conveying a supply signal to the transducer; and a signal conductor (30) for conveying an electrical signal produced by the transducer in response to a sound pressure wave.

Regarding claim 2, Smith shows, in Fig. 1, an amplifier (20) connected between the transducer and the signal conductor (30), the signal conductor (30) conveying an amplified electrical signal produced by the amplifier in response to the electrical signal.

Regarding claims 3, 58 and 63, as shown in Fig. 1, the internal conductor length (of 28) is less than a signal conductor length (of 30).

Regarding claims 6, 24, 59 and 61, Smith shows a plurality of amplification stages (54, 56) having power gains greater than one (the power gain is inherently greater than one for providing line level output).

Regarding claim 10, Smith shows a transmission interface (the housing of the complete microphone assembly).

Regarding claim 11, Smith shows separate cables for the supply conductor and the signal conductor.

Regarding claims 25, 26, 45 and 50, Smith shows the power input (32) configured to connect to a supply conductor (“B+”) of a transmission interface and a

signal output (100,102,98) configured to connect to a signal conductor of the transmission interface.

9. Claim 51 is rejected under 35 U.S.C. 102(b) as being anticipated by Billingsley (US 4,658,932).

Regarding claim 51, Billingsley discloses a sound capture device comprising: a first transducer (50), and a second transducer (51) positioned at a separation distance from the first transducer, the separation distance in accordance with sound reception at human ears on a human head facing a sound source (as shown in Fig. 2).

10. Claims 1-3, 6-9, 15, 16, 24-26, 29-31, 45, 48-50, 58-61 and 63 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosander (US 4,757,545).

Regarding claims 1-3, 15 and 16, Rosander discloses a sound capture device comprising a first transducer (1), a second transducer (3), a first amplifier (7), a second amplifier (8), a supply conductor (between 13 and 7), a signal conductor (from 11 to 6), another signal conductor (from 12 to 6c).

Regarding claims 6-9, 24-26, 29-31, 45, 48-50, 58-61 and 63, Rosander discloses a plurality of amplification stages (7, 8) having power gains greater than one, the power input (from 13 to 7) configured to connect to a supply conductor (between 7 and 11) of a transmission interface (Fig. 2) and a signal output (6) configured to connect to a signal conductor (from 11 to 6), the internal conductor (between 2 and 7). The gains are greater than 10 dB or 20 dB (co. 3, line 24). Rosander shows exactly two amplification stages (7 and 8).

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11. Claims 1, 2, 10, 11 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Sutton (US 5,377,273).

Regarding claims 1, 2, 10, 11 and 14, Sutton shows a sound capture device comprising: a transducer (20); a supply conductor (col. 3, line 27); a signal conductor (col. 3, lines 33-34); an amplifier (col. 3, line 28) and a single transmission interface (22).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 4, 5, 27, 28, 47, 48 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith.

The system as disclosed in Smith has been discussed above.

Regarding claims 4, 5, 27, 28, 47 and 48, Smith fails to explicitly state the exact value when comparing an internal conductor length and the signal conductor length (30). As disclosed by Smith, the internal conductor is within the microphone assembly. The sole purpose of the internal conductor is to provide a signal path between the transducer and the built-in amplifier. Since it is an internal element of the microphone assembly, there is no need for it to be long enough for external hookup. One skilled in the art would probably keep it as short as possible to minimize the cost and size. On

the other hand, the signal conductor is connected to another external audio equipment. One skilled in the art would have expected that the signal conductor should be long enough to provide supply line to another equipment. The exact length should depend on the location of the external equipment and the location of the microphone assembly. Basically, one skilled in the art would have expected that the ratio between the signal conductor length and the internal conductor length would be large. However, the exact ratio is a matter of engineering design choice depends on the application.

Regarding claim 62, Smith fails to show a root mean square voltage level between 2 and 6 volts. Smith teaches a complete microphone assembly producing line level of nominally 0.775 volts for a 600 ohm load (col. 2, line 20). The line level signal, as shows in Smith is to be further processed (through 12 as shown in Fig. 1). As long as the line level and the further processing circuitry are working within their limits, the line level value could be adjusted without damaging the further processing circuitry. Thus, it would have been obvious to one of ordinary skill in the art to modify Smith by adjusting the amplification stage in order to generate the line level signal having a value being within the limit of the next processing circuitry.

14. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosander.

The system as disclosed in Rosander has been discussed above.

Regarding claims 4 and 5, Rosander fails to explicitly state the exact value when comparing an internal conductor length and the signal conductor length (to 6). As disclosed by Rosander, the internal conductor is within the microphone assembly. The

sole purpose of the internal conductor is to provide a signal path between the transducer and the built-in amplifier. Since it is an internal element of the microphone assembly, there is no need for it to be long enough for external hookup. One skilled in the art would probably keep it as short as possible to minimize the cost and size. On the other hand, the signal conductor is connected to another external audio equipment. One skilled in the art would have expected that the signal conductor should be long enough to provide supply line to another equipment. The exact length should depend on the location of the external equipment and the location of the microphone assembly. Basically, one skilled in the art would have expected that the ratio between the signal conductor length and the internal conductor length would be large. However, the exact ratio is a matter of engineering design choice depends on the application.

15. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutton.

Regarding claims 12 and 13, Sutton fails to show the supply interface cable comprising a positive conductor, a negative conductor and a common conductor and a signal interface cable comprising a first signal conductor, a second signal conductor and a common signal conductor. Sutton teaches a coaxial cable which encloses all the wires necessary for biasing the microphone and generating amplifier microphone signal. However, one skilled in the art would have expected that the power line and the signal line could be separately housed without generating any unexpected result. Thus, it would have been obvious to one of ordinary skill in the art to modify Sutton by replacing

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the coaxial cable with separate cables for power and microphone signal respectively in order to eliminate the interface between the power and microphone signal.

16. Claims 52-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billingsley.

Regarding claims 52-54, Billingsley teaches that the human ear distance is between 5.5 to 8 inches, but fails to show the claimed distance. However, one skilled in the art would have expected that this distance would be varied from one person to another. Thus, it would have been obvious to one of ordinary skill in the art to modify Billingsley's system by modifying the distance between the microphones in according to specific head size.

Regarding claims 55-57, Billingsley teaches that the angle is 110° plus or minus 30° , but fails to show the claimed angles. However, one skilled in the art would have expected that this angle could be adjusted. By narrowing the angle, the microphones' area of reception is limited, but the noise outside of this limited area of reception will be eliminated. By widening the angle, the microphones will pick up greater sound from greater area of reception, but the noise would be a problem. Thus, it would have been obvious to one of ordinary skill in the art to modify Billingsley's system by modifying the angle between the microphones in according to specific application, such as simulating the sound directly in front of the user.

17. Claims 15-23, 1-6, 10,11, 36-44, 24, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billingsley in view of Smith.

Regarding claims 15-17, 36-38, Billingsley fails to show amplifier and the conductors. Billingsley teaches using two general microphones. One skilled in the art would have expected that any specific microphone assembly could be used. Smith teaches a complete microphone assembly with built-in amplifier for reducing the noise. Thus, it would have been obvious to one of ordinary skill in the art to modify Billingsley by utilizing the microphone assembly as taught in Smith in order to provide stereophonic output with less distortion.

The limitations of claims 1-6, 10, 11, 17-23, 24-28 and 39-44 have been discussed above.

18. Claims 128-136, 138, 139 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehara (US 5,577,129).

In view of 112, 1st paragraph rejection, for examination purpose, the limitation of the power supply value in terms of RMS value has been ignored.

Regarding claims 128-133, Ehara shows a sound capture apparatus comprising: a transducer (103) for producing, in response to a sound wave, an electrical signal at a transducer output (Vs) when receiving a power signal (from 109) at the transducer output; a resistor (any one of 104, 105, 107) connected to the transducer output (Vs) and for receiving a voltage from a power supply (Vcc) to form the power signal at the transducer output, an amplifier (102) connected to the transducer output for amplifying the electrical signal to produce an amplified electrical signal at an amplifier output.

Ehara shows the value of the resistor is any of 4.7 k Ω , 6.8 k Ω , and 2.2 k Ω , but fails to show the claimed values. The purpose of the resistor, as taught by Ehara, is to

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provide proper supply voltage and eliminate noise. One skilled in the art would recognize the structure of voltage divider as shown in 109. Therefore, the value of the resistor, as one skilled in the art would have expected, could be adjusted as long as the final voltage after the voltage divider is within the operation limit. Thus, it would have been obvious to one of ordinary skill in the art to modify Ehara by using a resistor having any suitable value for the voltage divider according to engineering design choice.

Regarding claims 134-136, although Ehara fails to show the specific value of the Vcc, this is a matter of engineering design choice to select the power supply to properly bias the microphone.

Regarding claims 138 and 139, Ehara shows the resistor (any one of 104, 105, 107) is for connecting to the power supply (Vcc) through a conductor (the wire between the resistor and Vcc) isolated from the amplifier output (101).

19. Claims 140-153 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehara as applied to claims 128-136, 138 and 139 above, and further in view of Kroon et al (US 5,680,506).

Regarding claims 140-153, Ehara fails to show A/D converter. Ehara teaches a general mobile telephone without specifying the processing circuitry. Kroon et al (hereafter Kroon) teaches how to process a microphone signal (from 105) using A/D converter (110) for a cellular phone. Thus, it would have been obvious to one of ordinary skill in the art to modify Ehara by utilizing the processing circuitry as taught in Kroon in order to process voice signal for a mobile telephone.

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20. Claims 64-74, 88, 91-93, 98-103, 105, 107, 109, 111, 118, 120-123 and 137 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehara as applied to claims 128-136, 138 and 139 above, and further in view of Rosander.

Regarding claims 64-72, 73, 91, 98, 100, 103, 105, 107, 109, 111, 118, 120-122 and 137, Ehara teaches an amplifier, which inherently has a gain, but fails to show an adjustable amplifying circuit with any claimed specific value. Rosander teaches an adjustable amplifier for selecting amplification depending on the input level on the microphone and the noise situation (col. 3, lines 23-31). Thus, it would have been obvious to one of ordinary skill in the art to modify Ehara by using adjustable amplifier as suggested by Rosander in order to accommodate different input sound pressure and the surround noise.

Regarding claims 74, 99, 101 and 123, Ehara shows a buffer resistor (121).

Regarding claim 88, Ehara fails to show the material of the conductor and the tubing. Ehara teaches general signal conductors for supplying power and microphone signal respectively. One skilled in the art would have expected that any specific material of cable and tubing could be used without generating any unexpected result. Thus, it would have been obvious to one of ordinary skill in the art to modify Ehara by using any suitable material for the conductors and the tubing without departing from the spirit of Ehara.

Regarding claim 92, Ehara shows the capacitor (120, 106).

Regarding claim 93, Ehara teaches a general capacitor, but fails to show polypropylene capacitor. However, one skilled in the art would have expected that any

functionally equivalent capacitors could be used without generating any unexpected result. Thus, it would have been obvious to one of ordinary skill in the art to modify Ehara by using any specify type of capacitor, including polypropylene capacitor, depending on a matter of engineering choice.

21. Claims 75-87, 90, 91/75, 95, 96, 103-111, 119, 122-127 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billingsley as applied to claims 52-54 above, and further in view of Ehara and Rosander.

The system of Billingsley is discussed above.

Regarding claims 125, 126, 76-86, 104, 106, 108, 110 and 119, Billingsley fails to show the power, the resistor and the gain. Billingsley teaches a general housing for mounting two general microphones for recording. One skilled in the art would have expected that any specific microphone processing circuitry could be used without generating any unexpected result. Ehara teaches how to provide biased voltage to a microphone and the amplifier for amplifying the microphone signal. Rosander teaches the benefit of having adjustable microphone amplifier. Thus, it would have been obvious to one of ordinary skill in the art to modify Billingsley in view of Ehara and Rosander in order to provide output signal with high signal to noise ratio.

Regarding claims 75, 87, 91/75, 122-127, with two separate microphones each having corresponding amplifier, the claimed at least two stages read on the amplifier for each microphone.

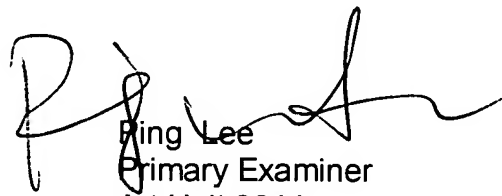
Regarding claim 90, Billingsley shows the dampening tube or bar (col. 7, lines 3-13).

Regarding claims 95 and 96, Ehara shows the resistor (107), but fails to show the resistor as 20K. The filter as shown in Ehara is formed by the combination of the resistor and capacitor which provides RC time constant. By having a large resistance for the resistor, using the multiplication rule, the value of the capacitor could be adjusted accordingly without generating any unexpected result. Thus, it would have been obvious to one of ordinary skill in the art to modify the resistor to any suitable value as long as the RC time constant remaining the same.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522. The examiner can normally be reached on Monday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Bing Lee
Primary Examiner
Art Unit 2644

pwl